SHREE CHANDULAL NANAVATI VINAYMANDIR

SECOND PRELIMINARY EXAMINATION

2018-2019

CHEMISTRY

Date: 12 | 01 | 2019

STD: 10

Marks: 80

Reading Time 15 Mins.

Writing Time 2 Hours.

Answers to this paper must be written on the paper provided separately.
You will not be allowed to write during the first 15 minutes.
This time is to be spent in reading the question paper.
The time given at the head of this paper is the time allowed for writing the answers.

Section I is compulsory. Attempt any four questions from Section II.
The intended marks for questions or parts of questions are given in brackets [ ].

SECTION I (40 Marks)

Attempt all questions from this section

Question 1

(a) Name the following: [5]

(i) ~~The structure that controls the pituitary gland.~~ The elements arranged in correct increasing order of electron affinity in a period are.

a) N, C, B b) B, Be, Li c) C, O, F d) O, N, Cl

(ii) The IUPAC name of the product formed on boiling chloroethane with alcoholic potash is

a) Ethanol b) Ethylene c) Ethene d) Ethyne

(iii) Blue vitriol can be prepared by the method of

a) Precipitation b) Direct Synthesis c) Displacement d) Neutralisation

(iv) The process used for the enrichment of sulphide ores is

a) Roasting b) Liquation c) [illegible] d) [illegible]ination

(v) To increase the pH value of a neutral solution we should add

a) an acid b) an acid salt c) an alkali d) a salt

(b) Name the gas evolved in each of the following: [5]

(i) Few drops of sodium hydroxide is added to ammonium chloride and heated.

(ii) Oil of vitriol is heated with sodium sulphide.

(iii) Solution of glucose with yeast is kept for few days.

(iv) Cold and dilute nitric acid is added to copper turnings.

(v) Methane is burnt in [illegible]

(c) Write balanced chemical equations for the following reactions: [5]

(i) Yellow phosphorous is mixed with conc. sulphuric acid. $P + H_2SO_4 \rightarrow$ ~~$H_3PO_4 + H_2O$~~ Phosphine,

(ii) A piece of sodium is added to ethanol.

(iii) Sodium meta aluminate is dissolved with water.

(iv) Conc. hydrochloric acid is heated to red lead.

(v) Acetic acid [illegible] caustic soda.

(d) State your observations for each of the following: [5]

(i) Washing soda crystals are left in china dish.

(ii) Copper nitrate crystals are heated in a hard glass testtube.

(iii) Hydrogen sulphide gas is bubbled through conc. sulphuric acid.

(iv) Excess of ammonium hydroxide is added to ferrous chloride solution.

(v) Sodium bicarbonate is treated with dilute hydrochloric acid.

Shop No. 1, Rangoli, Vasant Utsav,
Thakur Village, Kandivali (E),
Mumbai - 400 101.
Mob. 9821263050.

(e) Give reasons for the following: [5]

(i) Graphite anode is preferred to other electrodes, during electrolysis of molten lead bromide.

(ii) Pure acetic acid is known as glacial acetic acid.

(iii) Covalent compound exists as gases, liquids or soft solids.

(iv) Alkali metals are good reducing agents.

(v) Ammonium hydroxide is a weakelectrolyte.

(f) Solve: [5]

(i) Find the number of sodium sulphate ions in 14.2 grams of sodium sulphate. [Na=23; S=32; O=16]

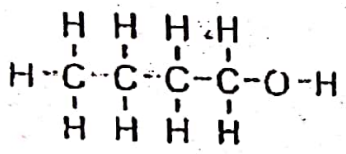
(ii) If 16.4 grams of calcium nitrate is heated, calculate the volume of

1) nitrogen dioxide obtained at stp.

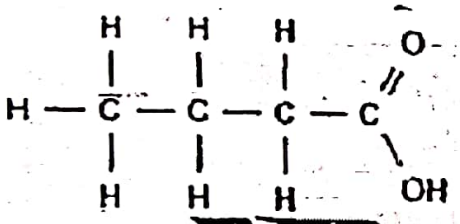
2) The mass of calcium oxide obtained. [Ca=40; N=14;

(g) Give the IUPAC names of the following compounds: [5]

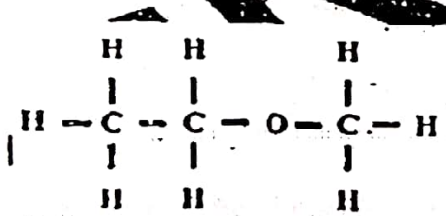
(i)



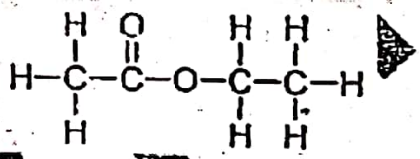
(ii)



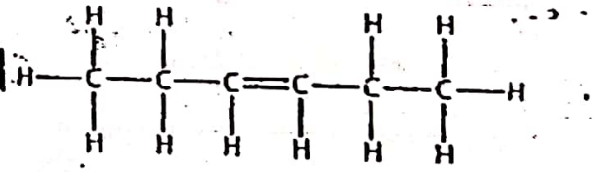
(iii)



(iv)



(v)



(h) Choose the ~~correct alternative from the choices given below each statement so as to complete its meaning:~~ [5]

State the property of underlined compound involved in the following reactions.

(i) Slaked lime is preferred over other caustic alkalis in lab preparation of ammonia.

(ii) Zinc hydroxide dissolves in excess of hot and conc. sodium hydroxide.

(iii) Conc. sulphuric acid is used to convert ethanol to ethene.

(iv) Tin is alloyed with lead in the manufacture of solder.

(v) Hydrogen chloride gas is dissolved in water using special funnel arrangement.

SECTION II (40 Marks)

Attempt any four questions from this section

Question 2

(a) Answer the following questions in relation to Hall Heroult's process: [6]

(i) Name the element which serves both as the anode and cathode in above process.

(ii) Identify the electrode at which aluminium is obtained. Give chemical reaction taking place at this electrode.

(iii) Give chemical formula of the two aluminium compounds present in the electrolyte.

(iv) Why powered coke is sprinkled over the surface of the electrolytic mixture?

(b) Define: Alloy. Name the main constituent metal in the following alloys: [4]

(1) Brass (2) Stainless Steel (3) Duralumin

Question 3

(a) An element 'P' belongs to the third period of the alkali metal. [5]

(i) Write the electronic configuration of

(ii) Write the formula of the compound formed between 'P' and other element 'Q' placed in group 16 of the same period.

(iii) Compare the ionization potential of 'P' and 'Q'.

(iv) Draw an electron dot diagram to show the formation of the compound formed between 'P' and other element 'R' placed in group 17 of the same period.

(v) Name the inert gas present in the same period.

(b) The number of atoms in one mole is 6×10^{23}. Calculate; [3]

(1) The number of molecules in 14 gms of Nitrogen Gas.

(2) Total number of atoms in 18 gms of water.

(3) The number of Chloride ions in 111 gms of anhydrous Calcium Chloride.

(N=14, H=1, Cl=35.5, Ca=40, O=16)

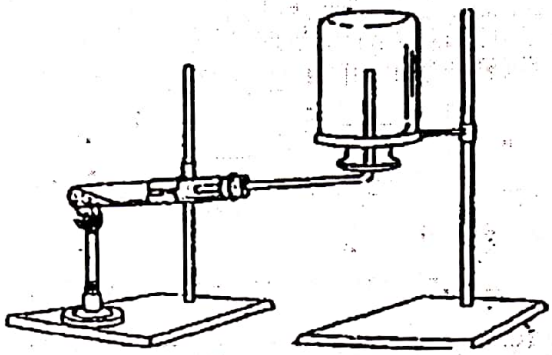
(c) Give reasons for the following: [2]

(1) Carbonic acid gives an acid salt but hydrochloric acid does not give an acid salt.

(2) Dry hydrogen chloride has no effect on dry litmus paper.

Question 4

(a) **The diagram shows an experimental set up of the laboratory preparation of a pungent smelling gas. The gas is alkaline in nature. Answer the following questions:** [6]



(i) Name the gas collected in the jar.

(ii) Give a balanced equation for the above preparation.

(iii) Identify the method of collection of the gas. Why the gas is collected using the shown method?

(iv) State your observation when the above gas is passed over

(1) heated copper oxide (2) copper sulphate solution. [4]

(b) **Draw the branched structural formula of the following organic compounds:**

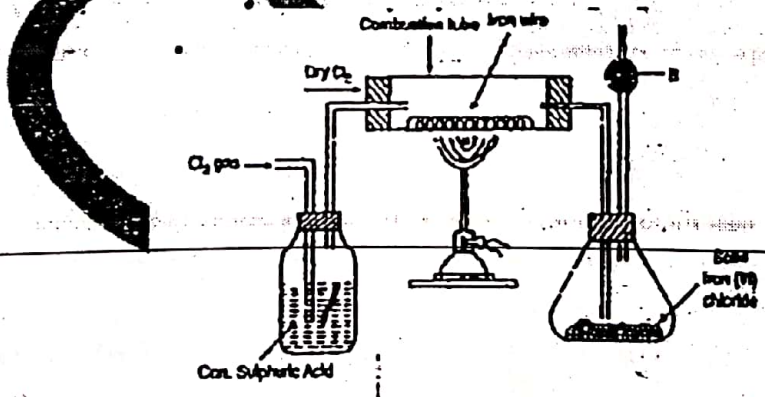
(1) Carboxylic acid with molecular formula $C_5H_{10}O_2$

(2) Position isomers of pentene.

(3) 2- methylprop-1-ene.

Question 5

(a) **The diagram given below is to prepare Iron [III] chloride in laboratory:** [5]



(i) Identify substance B? Why is it used here?

(ii) Write equation for the above reaction. Also name the type of the above reaction.

(iii) Why is Iron [III] chloride stored in a closed container?

(b) **Find the mass of quick lime formed by the decomposition of 200gm of limestone. What mass of carbon dioxide will be evolved? If the limestone is only 90% pure, what mass of quick lime will be produced? [Ca=40; C=12; O=16]** [3]

(c) **Give two points of differences between roasting and calcination.** [2]

Thakur Villa
Mumbai - 409 101.
Mob. 9821263050.

Question 6

(a) Write balanced chemical equations for the following: [5]

(i) A piece of magnesium wire is added to ethanoic acid.

(ii) Acetic acid is warmed with ethanol in the presence of conc. sulphuric acid.

(iii) Few drops of nitric acid are added to marble chips.

(iv) Sulphur powder is added to conc. nitric acid.

(v) Preparation of phosphoric acid from its anhydride.

(b) Select the correct answer from the list given in the bracket: [5]

(i) The ion most readily discharged during electrolysis. [Fe^{2} + Cu^{2} + Pb^{2} + H^{+}]

(ii) The metallic electrode which does not take part in electrolytic reaction. [Cu, Ag, Pt, Ni]

(iii) The ion discharged at the cathode during electrolysis of copper sulphate solution using copper electrodes as the anode and cathode. [Cu^{2+}, OH^{-}, SO_4^{2-}, H^{+}]

(iv) The cation discharged at cathode during electrolysis of [illegible] chloride using graphite electrodes. [Na^{+}, OH^{-}, H^{+}, Cl^{-})

(v) During silver plating of an article using sodium [illegible] as electrolyte, the anode material should be. [Cu, Ag, Pt, Fe]

Question 7

(a) P and Q are black powders. When reacted separately with conc. hydrochloric acid, they show the following changes: [3]

P dissolves in conc. hydrochloric acid producing a bluish solution without releasing any gas. Q reacts with conc. hydrochloric acid producing a greenish yellow gas which turns moist starch iodide paper blue black and finally bleaches it.

(i) Identify P and [illegible]

(ii) What property of [illegible] shown in [illegible]ss?

(b) Fill in the blanks and complete the given statements: [5]

(i) A solution M turns blue litmus red, so it must contains (1) _____ ions; and solution O turns red litmus blue and hence, must contain (2) _____ ions. When solution M and O are mixed together, the products will be (3) _____ and (4) _____. If a piece of magnesium was put into a solution M, (5)_____ gas would be evolved. [2]

(c) Identify the chemical reagents based on their uses described below:

(i) An organic acid used as ink stain remover.

(ii) A base used in bleaching powder.

****